M/053/005
Wayne Hedberg

State of Utah

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER QUALITY

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December 10, 1993

Mr. James A. Smith
USMX of Utah
P.O. Box 2650
St. George, Utah 84770

RE: **CONSTRUCTION PERMIT**
Leach Pad 2E2 and East Hamburg Makeup Water Pond, Goldstrike Mine

Dear Mr. Smith:

We have completed our review of the plans and specifications for the construction of the referenced facility, prepared by your consultants, Steffen, Robertson and Kirsten. The plans were submitted to us for the review and approval on October 28, 1993. A Quality Assurance and Quality Control (QA/QC) plan was received on November 29, 1993. Revised Ground Water Discharge Permit UGW 530001 was issued for these changes, dated December 8, 1993.

Based on the review of the submitted plans and supporting information, the project appears to comply with the requirements of *the Utah Water Quality Rules, (R317, Utah Administrative Code).* A **Construction Permit** is hereby issued as constituted by this letter, subject to the following conditions:

A. *Any revisions or modifications to the approved plans and specifications must be submitted to the Division of Water Quality (the Division) for review and approval, before construction or implementation thereof.*

B. *The approved facilities must not be placed in service unless the Division has made a final inspection, and has authorized in writing to place the constructed facilities in service.*

C. *The construction quality must be assured by an independent construction manager responsible for type and number of tests in accordance with the quality assurance and quality control (QA/QC) plan, by scheduling*

construction inspections at various stages of construction as described herein, with the Division.

D. *Any operational problems, such as leakage detection in the collection sumps, elevated contaminant levels in the ground water monitoring wells, subsidence, etc., must be reported to the Division within 24 of the occurrence of such an event by telephone or facsimile transmission, and in detail within seven days thereafter.*

E. *Long term or permanent termination of leaching must be reported to the Division. Closure activities must commence within 24 months of cessation of leaching.*

F. *The construction details not covered on the plans or in the specifications must be implemented as described herein.*

This construction permit will expire on December 9, 1994, unless substantial progress is made in constructing the approved facilities, or the plans and specifications have been resubmitted and the construction permit is reissued. This permit does not relieve you in any way of your obligations to comply with other applicable local requirements, or those stated in the permit issued under the Utah Pollutant Discharge Elimination System. You may contact Mr. Wayne Thomas, P.E., the Southwest District Engineer at (801) 673-3528, or Mr. Bill Dawson of the Southwest Utah District Health Department at (801) 586-2437, for further assistance in this regard.

CONSTRUCTION OF PAD 2E2

The 4.5-acre leach Pad No. 2E2 will be built adjacent to, and as an extension of, the existing leach Pad No. 2, along with a 5 million gallon make-up water pond. The liner system for the Pad No. 2E2 will be welded to the existing Pad No. 2 liner.

Pad No. 2E2 will be used to leach approximately 635,000 tons of ore, heaped to the maximum height of approximately 150 feet as measured from the toe to the shoulder of the heap. The ore will be stacked at the maximum slope of 2 horizontal to 1 vertical, as measured form the toe to the top of the heaped ore. The overall slope of the pad measured along the total length of the pad will not exceed 6.3 horizontal to 1 vertical. Areas between the toe of the heaped ore to the farthest edge of the proposed pad will be double lined with two high density polyethylene (HDPE) liners in a series of 15 x 100-foot panels, with leak collection pipes between the liners. The solution recovery system for Pad No. 2E2 will be tied to the existing solution ponds and process system, and is designed to limit the pregnant solution buildup to no more than one foot.

The process solution collection (overliner) material will consist of 24 inches of 1 1/2-inch material. Perimeter berms and drainage ditches will be constructed around the pad to direct surface runoff into the down-gradient drainage.

The pad is designed to withstand superimposed loading of the ore. The liner system consists of a textured 80-mil high density polyethylene [HDPE] liner - installed on the lower portions of the pad; an 80-mil HDPE non-textured liner - installed on the upper portions of the pad; a 12-inch thick clay liner constructed in two six-inch lifts with the minimum hydraulic conductivity of 2.0×10^{-7} centimeters per second; 6-inch thick leak detection media with the minimum hydraulic conductivity of 1.0×10^{-2} centimeters per second; and, 6-inch thick base or foundation material with the minimum hydraulic conductivity of 1.0×10^{-6} centimeters per second. The foundation or base will be compacted to 98 percent of maximum dry density (ASTM D-698) at minus two to plus five percent of optimum moisture content. The type and number of tests for the base, leak detection system, clay liner and the HDPE liner will be in accordance with the QA/QC plan.

The leak detection system will be divided by clay barriers. Each section will have separate leak detection and collection systems. The leak detection layer will be graded such that no piping of fine material from the clay liner will occur. Both perforated and nonperforated leak detection lines will be 1.5 inch diameter, Schedule 80, polyvinyl chloride (PVC) pipe. Perforations in the pipe will be at 120 degrees from the center of the pipe measured longitudinally. The perforated pipes will be located on the lower portion of each leak detection cell. A 20-mil PVC liner will be placed under each perforated pipe to expedite leakage collection, and to prevent plugging of the perforations from the finer material. The nonperforated PVC pipe will be checked for any blockage due to crushing during compaction, by introducing a measured amount at the inlet end of each section to be tested. The test section would probably be free from any defect or blockage due to crushing, if the amount of water recovered at the outlet end of the test section, is approximately equal to the amount of water introduced at the inlet end of the test section.

All liner anchor trenches will be at least 12 inches deep and will be filled with properly packed or compacted suitable material.

Construction of the East Hamburg Makeup Water Pond

A fresh water makeup pond will be built southeast of the existing process ponds, and is designed to contain 5 million gallons of fresh water. The bottom of the pond will be lined with 60-mil HDPE liner underlain by a 12-inch thick clay liner compacted to at least 95 percent of maximum dry density at plus or minus two percent of optimum moisture content with the minimum hydraulic conductivity of 2.0×10^{-7} centimeters per second. All native soils and fill materials within the limits of the pond footprint will be scarified to a depth of 12 inches, moisture conditioned to near optimum moisture content and re-compacted to within 95 percent of

maximum dry density (ASTM D-698). Leak detection pipes will be 1.5 inch in diameter and wrapped in a filter fabric gravel envelope and routed to a leakage collection sump. No perforation will be made in the HDPE liner. The leakage collection sump will be accessed through 8-inch diameter pipe. If or when leakage exceeds 200 gallons per day per acre in the leak collection sump the pond will be drained and repaired.

Construction Inspections

The Division must be advised within two days of the completion of construction of the foundation or the base, leak detection media and system, and each lift of the clay liner, and field seaming of the HDPE liner. Further scheduled or sequenced construction or installation of the next component must not begin without the concurrence of the Division. Any overliner material or ore must not be placed on the HDPE liner until the Division has inspected the installed liner. All interfaces between existing and new liner material must be inspected and approved, and tested after completion. The Division of Oil Gas and Mining must be notified to periodically inspect all leak detection sumps at the site during their inspections.

Operating Protocols

The Division must be notified of the intent of decommissioning in writing before any closure procedures are begun. The applicable neutralization criteria will be as adopted by the Utah Water Quality Board at the time of decommissioning, or as approved in writing by the Division at the time of decommissioning, but in no case will the neutralization criteria for this heap leach project result in degradation of the surface or ground water quality including beneficial uses thereof in the vicinity.

Please be advised that any increase in pH, cyanide or other metals listed in the ground water permit in ground water or surface water above background level due to this project may cause the project to be listed on the national priority list of hazardous substance sites by EPA pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). All wastes not exempt under the mining exemption will need to be managed in accordance with Utah's Hazardous Waste Management regulations (i.e. spent solvents, off specification chemicals, undesirable metals in the leach solutions etc.).

A set of approved plans and specifications is returned herewith bearing an imprint of our construction permit stamp. The stamped set must be kept available for examination and inspections to be conducted by the Division, or for resolution of any conflicts or discrepancies that may arise during construction or installation.

Please advise us of the beginning of construction. This will enable us to schedule periodic inspections. We request that a copy of record drawings be provided after the final inspection has been conducted by the Division, and completed works have been placed in service. This will enable us to keep our information accurate.

If we can be of further assistance, please contact Mr. Lyle Stott of my staff.

Sincerely,

Utah Water Quality Board

Don A. Ostler, P.E.
Executive Secretary

Enclosure

DAO:KLB:LWS:rvg

cc: Mr. Gene Muller - Steffen, Robertson and Kirsten
Mr. Paul Valenti USMX, Inc.
Mr. Wayne Thomas, P.E., Southwest District Engineer
Mr. Lowell Braxton, Division of Oil, Gas and Mining
Mr. Tim Provan, Division of Fish and Game

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